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the Boer war, and eventually gun-sighting telescopes formed part of the equipment of all naval guns. In consequence of the rapidly increasing demand for this kind of instrument, Common decided to build the large optical factory at Ealing, and in commemoration of his research on the nebula in Orion the works were named "Orion Works," and Ottway became Common's sole partner. Gun sights continued to be made in large numbers, and those used during the naval engagements of the Japanese and Russian squadrons were all made at the Ealing works.

On Dr. Common's death in 1903 Ottway was left to carry on the business alone, but he did this so successfully that it was necessary to enlarge the works from time to time; he further developed the gun sight and made an improved telescope of variable power which is now used throughout the navy, and adds in no small measure to the efficiency of our naval guns.

During his residence in Ealing he took an active part in the municipal work of the borough, and had been a member of the Ealing Town Council just over seven years. But for his untimely death, which took place on 1915 January 1, he would have occupied the mayoral chair, having been nominated to that office.

He leaves a widow and four sons.

He was elected a Fellow of the Society 1906 January 12.

[The Council are indebted for this notice to Mr. W. Shackleton.]

Ernest William Owens was born in 1854, and went to sea as an apprentice when he was 14 years of age. He qualified as second mate in 1872, and steadily advanced to the rank of captain. After a varied and adventurous career in numerous sailing vessels and steamships, he was appointed in 1893 to an instructorship at the Liverpool Technical College. Five years later he came to London to take up the position of junior examiner of masters and mates for the port. He eventually rose to be chief examiner, and was also secretary to the Local Marine Board, London. He took great practical interest in everything connected with the merchant service, and was widely known and highly respected. Several acts of conspicuous bravery are recorded of him, and on one occasion he was honoured by the award of the Albert Medal "for gallantry at sea."

Captain Owens was keenly interested in astronomy, and was very successful as a writer of nautical text-books, one of his best-known volumes being *How to learn Ashore the Rule of the Road at Sea.* He died suddenly at his residence at Erith on 1915 August 14.

He was elected a Fellow of the Society 1903 May 8.

James Simms, who died on September 4, at the age of eighty-seven, was nearly, but not quite, our oldest Fellow. Since 1871 he has been sole proprietor of the business well known by the name of "Troughton & Simms," now being carried on by his sons

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William and James Simms. There has been no Troughton in the business since Edward Troughton retired from it in 1831. The leading facts about the firm were given in the *Monthly Notices*, lxvii. p. 237, on the occasion of the death of Mr. William Simms, who was partner with the subject of this note from 1861 to 1871, and have recently been recalled with some additions in the *Observatory* for 1915 December. They need scarcely be repeated at length; but it may be of general interest to have a brief summary in the form of a genealogical tree, in so far as it relates to the various members of the Simms family who had astronomical leanings. The frequent use of the names James and William carries with it some risk of confusion.

James Simms,
of No. 1 Bowman's Buildings, Aldersgate Street,
residing at 11 Barnsbury Row, Islington.
Buried in St. Ann's, Blackfriars.

William Simms (1793 - 1860). Partner of E. Troughton, 1826. Sole proprietor, 1831. F.R.S., 1852. F.R.A.S., 1831. Council.

Fred. Walter Simms (1803-1865). Assistant R.O.Gr. till 1835. Engineer. In India, 1846 - 51. Then health shattered. F.R.A.S.

James Simms, manufacturer of ship's compasses, etc., Greville St., Hatton Garden.

Three other brothers.

W. H. Simms. See note (*α*).

JAMES SIMMS (1828-1915). Entered firm 1842. Partner, 1861-71. Sole proprietor, 1871 - 1915. F.R.A.S., 1857 Mar 13. Nearly oldest Fellow at death.

William Simms, "junior" (1817 - 1907). Entered firm 1836. Partner 1861; retired 1871. F.R.A.S., 1851 - 1907. Council, 1867-9. Oldest Fellow at time of death.

William Simms. James Simms.
Present partners in the firm.

(*α*) Mr. W. H. Simms was apparently never a F.R.A.S., for which one reason was probably that he resided for some years in Ceylon. But our volumes contain several papers by him; those in *M.N.*, vi. 206, vii. 20, xvii. 27 being "communicated" by his father. In xvii. 176 the ceremonial "communication" is omitted from the title, but there is no justification of this by a recorded election as a Fellow. The abstract indexed to him (Gen. Index) in xvii. 28 is really by Hartnup; and that in xvii. 80 is apparently by mistake for his father. Finally, the index refers rightly to a "Notice of his papers, etc.," in xvii. 9; but in the notice itself he is erroneously described as "W. Simms, Junr," a designation generally used for another member of the family.

(*β*) For those members of the family who were F.R.A.S., further particulars are given in the obituary notices.

"Soon after taking command Mr. James Simms, finding that the premises in Fleet Street were becoming too small for the fast-

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increasing business, purchased two acres of land in Woolwich Road, Charlton, Kent, which are now practically covered with workshops, the firm still continuing to have a shop in Fleet Street (now No. 138; formerly numbered 136), and from these works in Charlton instruments have issued to observatories in all parts of the world. The records of the firm show that Transit Circles have been supplied to ten observatories of the first class: Harvard, Dunecht, Cambridge, Melbourne, Perth (West Australia), Pola (Austria), Mexico, Sydney, Canada, and the Cape of Good Hope. The optical parts of the Greenwich Transit Circle and of the former Great Equatorial were made by the firm, but these were in the early years of Mr. James Simms, and can scarcely be said to have been made under his direction. The present Altazimuth was, however, his creation, as were all the micrometers now in use at Greenwich for measuring photographs, and many other instruments of the class now located in various parts of the world. Equatorials have been made in some number, and many of the instruments used in the Transit of Venus Expedition of 1874, some of which have found a home in British and Colonial observatories, were made by the firm." (*Observatory*, 1915 Dec.)

In this more specially scientific part of the work Mr. James Simms took a keen delight. When the present writer took up his duties in Oxford in 1894, he had the pleasure of a visit of a few days from Mr. Simms, and gratefully remembers the varied benefits to the Observatory which resulted therefrom. Among the more important and enduring are, firstly, the "Artificial Sky," an apparatus whereby stellar transits can be observed by students independently of weather, and wherein lightness and strength are ingeniously combined by the use of bamboo rods and wire-stays; and, secondly, a simple type of micrometer for measuring photographic plates, which has been adopted, with very slight modifications, in all the Oxford instruments and in several copied from them elsewhere. But minor matters were even more striking. There was at that time something wrong with the transit circle, the cause of which Mr. Simms identified with admirable quickness. And in another instrument there was a defect for which he wanted a special tool not in the observatory workshop: without a moment's hesitation he took off his almost clerical frock-coat, first made the tool, and then with it made the necessary repair, all with the obvious zest of a boy enjoying a holiday.

Visitors to his works at Charlton often found him testing theodolites in the open yard; for the specially scientific work was only a minor portion of the activities of the firm. Theodolites, sextants, and surveying instruments were made in large numbers and supplied to all parts of the world; and Mr. Simms reserved for himself the pleasure of testing the optical performance of each. But he was always ready to leave this engrossing occupation to pilot the visitor round the works, dwelling lovingly at any point where some new scientific experiment was being made; and it was seldom indeed that there was not something of the kind. He

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made a special form of surveying theodolite called a tacheometer, which was in great request in some foreign countries; and he introduced reading microscopes in place of verniers, whereby the accuracy of theodolite observations was very considerably increased.

"Accurate division is a speciality of the establishment, and the British National Standards are the work of Messrs. Troughton & Simms. Not very many years ago Mr. James Simms was asked to construct the National Standards for the Russian Government, and his completion of the task was so satisfactory that the Czar of Russia presented him with a service of gold plate as a personal gift in recognition of the service rendered—an incident of which Mr. Simms was very justly proud." (*Observatory*, *loc. cit.*)

There is but one paper in our *Monthly Notices* by James Simms, "Description of a Zenith Telescope," which was also exhibited at the meeting of 1868 March 13. It was for use by what is known as "Talcott's method," from the description given by Talcott in the U.S. Coast Survey Report for 1857. But with characteristic thoroughness Mr. Simms, after tersely describing the instrument itself and the method, points out that the method was used by Pond and described by him in a paper read to the Royal Society 1834 March 13, which "paper appears to have been generally lost sight of." It seems probable that James Simms owed knowledge of Pond's work and paper to his uncle F. W. Simms, who was assistant to Pond till 1835 (see tabular statement). His own paper of 1868 March seems to have elicited from Professor Piazzi Smyth at the following meeting two extracts from letters by G. Davidson, describing the instruments used in the U.S. Coast Survey; but no further reference is made to Pond's prior claims.

Mr. Simms married in 1859 June, and leaves two sons, William and James, who are now carrying on the business as partners, and who kindly supplied some of the information quoted above. Mrs. Simms died some years before her husband.

He was elected a Fellow of the Society on 1857 March 13.

H. H. T.

Henry William Lloyd Tanner, who died 1915 March 5, was born at Burham, in Kent, 1851 January 17. He was educated at Bristol Grammar School and Jesus College, Oxford. His decided bent for mathematical research was stimulated by Mr. John Griffiths, his mathematical tutor. He held educational appointments until the year 1883, when he was appointed Professor of Mathematics and Astronomy in the newly founded University College of South Wales and Monmouthshire at Cardiff. He occupied this chair till his resignation, through failing health, in 1909. He took an active part in arranging the mathematical work of the University, and made a great reputation for himself as an administrator and inspiring teacher. When the British Association met in Cardiff in 1891 he was one of the local secretaries. Such a position is most difficult to fill satisfactorily,